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1 Information filtering and query indexing for an information retrieval model

 Christos Tryfonopoulos, Manolis Koubarakis, Yannis Drougas
 February 2009 **Transactions on Information Systems (TOIS)**, Volume 27

Publisher: ACM

Full text available: Pdf (1.23 MB) Additional Information: full citation, abstract, referer

Bibliometrics: Downloads (6 Weeks): 126, Downloads (12 Months): 266, Citation

In the information filtering paradigm, clients subscribe to a server with profiles that express their information needs. Clients can also publish servers. Whenever a document is published, the continuous queries sati

Keywords: Information filtering, performance evaluation, query indexing, selective dissemination of information

2 Efficient IP table lookup via adaptive stratified trees with selective replacement

 Marco Pellegrini, Giordano Fusco
 June 2008 **Journal of Experimental Algorithms (JEA)**, Volume 12

Publisher: ACM

Full text available: Pdf (218.61 KB) Additional Information: full citation, abstract, referer

Bibliometrics: Downloads (6 Weeks): 8, Downloads (12 Months): 213, Citation

IP address lookup is a critical operation for high-bandwidth routers in packet networks, such as Internet. The lookup is a nontrivial operation, since it searching for the longest prefix, among those stored in a (large) given t

Keywords: IP table lookup, data structures

3 Efficient simulation of Internet worms

 David M. Nicol
 April 2008 **Transactions on Modeling and Computer Simulation (TOMCS)**, Issue 2

Publisher: ACM

Full text available: Pdf (616.44 KB) Additional Information: full citation, abstract, referer

Bibliometrics: Downloads (6 Weeks): 21, Downloads (12 Months): 307, Citation

Simulation of Internet worms (and other malware) requires tremendous resources when every packet generated by the phenomena is modeled | the other hand, models of worm growth based on differential equations significant ...

Keywords: Worms, denial-of-service, modeling, simulation

4 High-performance packet classification algorithm for multithreaded I/O processor

Duo Liu, Zheng Chen, Bei Hua, Nenghai Yu, Xinan Tang
February 2008 **Transactions on Embedded Computing Systems (TECS)**

Publisher: ACM

Full text available: Pdf (1.17 MB) Additional Information: [full citation](#), [abstract](#), [referenc](#)

Bibliometrics: Downloads (6 Weeks): 12, Downloads (12 Months): 174, Citation

Packet classification is crucial for the Internet to provide more value-add guaranteed quality of service. Besides hardware-based solutions, many classification algorithms have been proposed. However, classifying at 10

Keywords: Network processor, architecture, embedded system design, packet classification, thread-level parallelism

5 P-ring: an efficient and robust P2P range index structure

Adina Crainiceanu, Prakash Linga, Ashwin Machanavajjhala, Johannes Gehring, Shanmugasundaram
June 2007 **SIGMOD '07**: Proceedings of the 2007 ACM SIGMOD international conference on Management of data

Publisher: ACM

Full text available: Pdf (410.43 KB) Additional Information: [full citation](#), [abstract](#), [referenc](#)

Bibliometrics: Downloads (6 Weeks): 8, Downloads (12 Months): 145, Citation

Peer-to-peer systems have emerged as a robust, scalable and decentralized system to publish data. In this paper, we propose P-Ring, a new P2P index structure that supports both equality and range queries. P-Ring is fault-tolerant, provi

Keywords: load balancing, peer-to-peer systems, range queries

6 CAMP: fast and efficient IP lookup architecture

Sailesh Kumar, Michela Beccati, Patrick Crowley, Jonathan Turner
December 2006 **ANCS '06**: Proceedings of the 2006 ACM/IEEE symposium on networking and communications systems

Publisher: ACM

Full text available: Pdf (636.29 KB) Additional Information: [full citation](#), [abstract](#), [referenc](#)

Bibliometrics: Downloads (6 Weeks): 4, Downloads (12 Months): 48, Citation

A large body of research literature has focused on improving the performance of prefix match IP-lookup. More recently, embedded memory based architectures have been proposed, which delivers very high lookup and update throughput. These

Keywords: IP lookup, internet router, longest prefix match

- 7 High-performance packet classification algorithm for many-core and network processor

Duo Liu, Bei Hua, Xianghui Hu, Xinan Tang

October 2006 **CASES '06: Proceedings of the 2006 international conference architecture and synthesis for embedded systems**

Publisher: ACM

Full text available: Pdf (1.14 MB) Additional Information: full citation, abstract, referer

Bibliometrics: Downloads (6 Weeks): 8, Downloads (12 Months): 103, Citation

Packet classification is crucial for the Internet to provide more value-add guaranteed quality of service. Besides hardware-based solutions, many classification algorithms have been proposed. However, classifying at 10

Keywords: architecture, embedded system design, multithreading, net packet classification, thread-level parallelism

- 8 A TCAM-based distributed parallel IP lookup scheme and performance

Kai Zheng, Chengchen Hu, Hongbin Lu, Bin Liu

August 2006 **IEEE/ACM Transactions on Networking (TON)**, Volume 14 I

Publisher: IEEE Press

Full text available: Pdf (883.08 KB) Additional Information: full citation, abstract, referer

Bibliometrics: Downloads (6 Weeks): 5, Downloads (12 Months): 89, Citation

Using ternary content addressable memory (TCAM) for high-speed IP access has been gaining popularity due to its deterministic high performance. However, the slow improvement of memory accessing speed, the route lookup en

Keywords: IP, TCAM, power consumption, route lookup, throughput

- 9 Chisel: A Storage-efficient, Collision-free Hash-based Network Processing Architecture

Sahangir Hasan, Srihari Cadambi, Venkatta Jakkula, Srimat Chakradhar

June 2006 **ISCA '06: Proceedings of the 33rd annual international symposium on computer architecture**

Publisher: ACM

Full text available: Pdf (450.93 KB) Additional Information: full citation, abstract, referer terms

Bibliometrics: Downloads (6 Weeks): 12, Downloads (12 Months): 83, Citation

Longest Prefix Matching (LPM) is a fundamental part of various network protocols. Previously proposed approaches for LPM result in prohibitive cost and power requirements (TCAMs) or in large memory requirements and long lookup latencies (trie).

Keywords: IP Lookup, Packet Classification, Hash Tables, Bloom Filters, Matching.

Also published in:

May 2006 SIGARCH Computer Architecture News Volume 34 Issue 2

10 Longest prefix matching using bloom filters

Sarang Dhamdhere, Praveen Krishnamurthy, David E. Taylor

April 2006 IEEE/ ACM Transactions on Networking (TON) , Volume 14 Issue

Publisher: IEEE Press

Full text available: Pdf (487.30 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Bibliometrics: Downloads (6 Weeks): 8, Downloads (12 Months): 78, Citation

We introduce the first algorithm that we are aware of to employ Bloom prefix matching (LPM). The algorithm performs parallel queries on Bloom efficient data structure for membership queries, in order to determine a

Keywords: Bloom filter, IP lookup, computer networking, longest prefix

11 Adaptive data structures for IP lookups

Ioannis Ioannidis, Ananth Grama, Mikhail Atallah

December 2005 Journal of Experimental Algorithms (JEA) , Volume 10

Publisher: ACM

Full text available: Pdf (258.90 KB) Additional Information: [full citation](#), [appendices](#) and [abstract](#), [references](#), [index](#)

Bibliometrics: Downloads (6 Weeks): 6, Downloads (12 Months): 84, Citation

The problem of efficient data structures for IP lookups has been well studied literature. Techniques such as LC tries and extensible hashing are common paper, we address the problem of generalizing LC tries, based on traces

Keywords: IP lookups, level compression

12 Overcoming the memory wall in packet processing: hammers or locks?

Jayaram Mudigonda, Harrick M. Vin, Raj Yavatkar

October 2005 ANCS '05: Proceedings of the 2005 ACM symposium on Architectures for networking and communications systems

Publisher: ACM

Full text available: Pdf (207.39 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [terms](#)

Bibliometrics: Downloads (6 Weeks): 19, Downloads (12 Months): 69, Citation

Overhead of memory accesses limits the performance of packet processing To overcome this bottleneck, today's network processors can utilize a wide range of mechanisms-such as multi-level memory hierarchy, wide-word accesses for purpose ...

Keywords: data-caches, multithreading, network processors

13 Hardware-based IP routing using partitioned lookup table

Mohammad J. Akbarizadeh, Mehrdad Nourani

August 2005 IEEE/ ACM Transactions on Networking (TON) , Volume 13 Issue

Publisher: IEEE PressFull text available: Pdf (580.38 KB) Additional Information: [full citation](#), [abstract](#), [referencer terms](#)**Bibliometrics:** Downloads (6 Weeks): 6, Downloads (12 Months): 64, Citation

We present a search algorithm implementable by a parallel architecture partitioned forwarding table. This scheme effectively reduces the complexity of the "longest prefix match" problem to "a prefix match" problem. The main idea is to partition the forwarding table into several parallel tables.

Keywords: IP address, content addressable memory, forwarding table, longest prefix matching, partitioned forwarding

14 Scalable, memory efficient, high-speed IP lookup algorithmsRama Sangireddy, Natsumi Futamura, Srinivas Aluru, Arun K. Somanji
August 2005 **IEEE/ ACM Transactions on Networking (TON)**, Volume 13 Issue 4**Publisher:** IEEE PressFull text available: Pdf (699.74 KB) Additional Information: [full citation](#), [abstract](#), [referencer terms](#)**Bibliometrics:** Downloads (6 Weeks): 8, Downloads (12 Months): 92, Citation

One of the central issues in router performance is IP address lookup based on longest prefix matching. IP address lookup algorithms can be evaluated on a number of criteria such as memory usage, lookup time, update time, memory usage, and to a less important extent, scalability.

Keywords: IP packet forwarding, address lookups, longest prefix matching, memory usage, scalability

15 Fast incremental updates for pipelined forwarding enginesAnindya Basu, Girija Narlikar
June 2005 **IEEE/ ACM Transactions on Networking (TON)**, Volume 13 Issue 4**Publisher:** IEEE PressFull text available: Pdf (941.54 KB) Additional Information: [full citation](#), [abstract](#), [referencer terms](#)**Bibliometrics:** Downloads (6 Weeks): 1, Downloads (12 Months): 49, Citation

Pipelined ASIC architectures are increasingly being used in forwarding engines. We explore optimization issues in the design of memory structures that support fast incremental updates in such forwarding engines.

Keywords: core routers, packet forwarding, pipelined IP lookup, route selection

16 A Tree Based Router Search Engine Architecture with Single Port M

Florin Baboescu, Dean M. Tullsen, Grigore Rosu, Sumeet Singh

June 2005 **ISCA '05: Proceedings of the 32nd annual international symposium on Computer architecture****Publisher:** ACMFull text available: Pdf (293.29 KB) Additional Information: [full citation](#), [abstract](#), [referencer terms](#)**Bibliometrics:** Downloads (6 Weeks): 12, Downloads (12 Months): 62, Citation

Pipelined forwarding engines are used in core routers to meet speed demands. Based searches are pipelined across a number of stages to achieve high throughput. This results in unevenly distributed memory. To address this imbalance,

Also published in:

May 2005 SIGARCH Computer Architecture News Volume 33 Issue 2

17 Scalable packet classification

Florin Baboescu, George Varghese

February 2005 IEEE/ ACM Transactions on Networking (TON) , Volume 13

Publisher: IEEE Press

Full text available: Pdf (501.73 KB) Additional Information: full citation, abstract, referer terms, review

Bibliometrics: Downloads (6 Weeks): 5, Downloads (12 Months): 82, Citation

Packet classification is important for applications such as firewalls, intrusion detection systems and differentiated services. Existing algorithms for packet classification literature scale poorly in either time or space as filter databases ...

18 Processing XML streams with deterministic automata and stream processing

Todd J. Green, Ashish Gupta, Jerome Miklau, Makoto Onizuka, Dan Suciu

December 2004 Transactions on Database Systems (TODS) , Volume 29

Publisher: ACM

Full text available: Pdf (717.00 KB) Additional Information: full citation, appendices and abstract, references, cited by

Bibliometrics: Downloads (6 Weeks): 20, Downloads (12 Months): 161, Citation

We consider the problem of evaluating a large number of XPath expressions on XML packets. We contribute two novel techniques. The first is to use Deterministic Finite Automaton (DFA). The contribution here is to show

Keywords: XML processing, stream processing

19 Parallelism versus memory allocation in pipelined router forwarding

Fan Chung, Ronald Graham, George Varghese

June 2004 SPA '04: Proceedings of the sixteenth annual ACM symposium on parallel algorithms and architectures

Publisher: ACM

Full text available: Pdf (194.18 KB) Additional Information: full citation, abstract, referer terms

Bibliometrics: Downloads (6 Weeks): 1, Downloads (12 Months): 21, Citation

A crucial problem that needs to be solved is the allocation of memory to the pipeline. Ideally, the processor memories should be totally separate (i.e. no shared memory) in order to minimize contention; however, this minimizes memory bandwidth.

Keywords: approximation algorithm, memory allocation

20 Tree bitmap: hardware/software IP lookups with incremental updates

Will Eatherton, George Varghese, Zubin Dittia

April 2004 SIGCOMM Computer Communication Review , Volume 34 Issue

Publisher: ACM

Full text available:  Pdf (189.39 KB) Additional Information: full citation, abstract, references

Bibliometrics: Downloads (6 Weeks): 14, Downloads (12 Months): 87, Citation

Even with the significant focus on IP address lookup in the published literature, there is still a focus on this market by commercial semiconductor vendors, there is still a need for router architects to find solutions that simultaneously meet 3 criteria: ..

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